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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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MCDERMOTT WILL & EMERY LLP
18191 VON KARMAN AVE.
SUITE 500
IRVINE, CA 92612-7108

EXAMINER	
BLACKWELL, GWENDOLYN A	
ART UNIT	**PAPER NUMBER**
1775	

DATE MAILED: 05/03/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/826,645	WEI ET AL.	
	Examiner	Art Unit	
	Gwendolyn Blackwell	1775	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 March 2006*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-31* is/are pending in the application.

4a) Of the above claim(s) *25-30* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-24 and 31* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *16 April 2004* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *7/04*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Group I, claims 1-24 and 31 in the reply filed on March 22, 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

The requirement is still deemed proper and is therefore made FINAL.

Claim Rejections - 35 USC § 112

2. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> *The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.*

3. Claims 1-24 and 31 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1-15 and 31 are indefinite as each require a first layer having a tensile stress and second layer having a compressive stress. A layer has compressive and tensile stress. Should the first layer have a higher tensile stress and a lower compressive stress? Should the second layer have a higher compressive stress and a lower tensile stress? What are the parameters that Applicant is considering as the tensile stress range and the compressive stress range? Clarification is required.

Claims 12 and 13 are indefinite as each requires as silicon oxynitride layer having the formula SiO_xN_y, wherein x ranges from 0 to 2 and y ranges from 0 to 4/3. As a silicon oxynitride layer must have at least some amount of silicon and oxygen and nitride, how is it

possible that the lower range from x and y can be 0? If either one is 0 than the layer would not be a silicon oxynitride but a silicon oxide layer or a silicon nitride layer. In addition, how is it possible for the silicon oxynitride layer to have possibly the same composition yet one layer have a tensile stress and the other a compressive stress? Clarification is required.

Claims 16-24 are indefinite as claim 16 has a silicon oxynitride coating changing from a tensile stress (bottom) to a compressive stress (surface). A layer has compressive and tensile stress. Should the first part of the layer have a higher tensile stress and a lower compressive stress? Should the second part of the layer have a higher compressive stress and a lower tensile stress? What are the parameters that Applicant is considering as the tensile stress range and the compressive stress range? Clarification is required.

To further prosecution the tensile stress and compressive stress terms will be taken to mean that the greater stress in a layer is either tensile or compressive.

Drawings

4. Figure 5 is objected to under 37 CFR 1.83(a) because the figure fails to show the absence of sign of cracking or delamination as described in the specification, (page 4). Any structural detail that is essential for a proper understanding of the disclosed invention should be shown in the drawing. MPEP § 608.02(d). Corrected drawing sheets in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. Any amended replacement drawing sheet should include all of the figures appearing on the immediate prior version of the sheet, even if only one figure is being amended. The figure or figure number of an amended drawing should not be labeled as "amended." If a drawing figure is to be canceled, the appropriate figure must be removed from the replacement sheet, and where necessary, the

remaining figures must be renumbered and appropriate changes made to the brief description of the several views of the drawings for consistency. Additional replacement sheets may be necessary to show the renumbering of the remaining figures. Each drawing sheet submitted after the filing date of an application must be labeled in the top margin as either "Replacement Sheet" or "New Sheet" pursuant to 37 CFR 1.121(d). If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Objections

5. Applicant is advised that should claim 1 be found allowable, claim 17 will be objected to under 37 CFR 1.75 as being a substantial duplicate thereof. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k). The silicon oxynitride sublayers of claim 17 could be construed as the silicon oxynitride individual layers as set forth in claim 1.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(a) the invention was known or used by others in this country, or patented or described in a printed publication in this or a foreign country, before the invention thereof by the applicant for a patent.

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 14 and 15 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent no. 5,425,983, Propst et al.

Regarding claims 14 and 15

Propst et al disclose an infrared window comprised of an infrared transparent substrate and an antireflection coating wherein the coating is comprised of a base layer and a stress reducing layer that is resistant to abrasion particle damage and rain damage, (column 2, lines 35-57). The stress reducing layer is comprised of alternating layers deposited in alternating tension and compression, (column 3, lines 45-64).

The phrase "for providing environmental stability and mechanical integrity in space" is considered a statement of intended use. The intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Because the infrared protected window is not structurally different from the device as claimed by Applicant, the device as claimed does not provide patentable distinction over the prior art of record.

When the structure recited in the reference is substantially identical to that of the claims, the claimed properties or function are presumed present. *MPEP 2112.01*. Because the prior art exemplifies the applicant's claimed layer structure, the claimed physical properties are present in the prior art of record. Absent an objective showing to the contrary, the addition of the claimed physical properties to the claim language fails to provide patentable distinction over the prior art of record, meeting the limitations of claims 14 and 15.

8. Claims 14-15 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent no. 6,362,091, Andideh et al.

Regarding claims 14 and 15

Andideh et al disclose a semiconductor device having a first layer under tensile stress and a second layer formed on the first layer having under compressive stress, (column 3, lines 30-46).

The phrase "for providing environmental stability and mechanical integrity in space" is considered a statement of intended use. The intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Because the semiconductor device is not structurally different from the device as claimed by Applicant, the device as claimed does not provide patentable distinction over the prior art of record.

When the structure recited in the reference is substantially identical to that of the claims, the claimed properties or function are presumed present. *MPEP 2112.01*. Because the prior art exemplifies the applicant's claimed layer structure, the claimed physical properties are present in the prior art of record. Absent an objective showing to the contrary, the addition of the claimed physical properties to the claim language fails to provide patentable distinction over the prior art of record, meeting the limitations of claims 14 and 15.

9. Claims 1-8, 12-16, and 20 are rejected under 35 U.S.C. 102(b) as being anticipated by United States Patent no. 6,461,899, Kitakado et al.

Regarding claims 1-8, 14-16, and 20

Kitakado et al disclose an oxynitride blocking laminate, which provides mechanical durability to semiconductor devices, (column 1, lines 7-25). The first silicon oxynitride layer has a tensile stress and the second oxynitride layer has a compressive stress, (column 7, lines 6-33).

The phrase "for providing environmental stability and mechanical integrity in space" is considered a statement of intended use. The intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Because the blocking laminate is not structurally different from the device as claimed by Applicant, the device as claimed does not provide patentable distinction over the prior art of record, meeting the limitations of claims 1, 16, and 20.

When the structure recited in the reference is substantially identical to that of the claims, the claimed properties or function are presumed present. *MPEP 2112.01*. Because the prior art exemplifies the applicant's claimed layer structure, the claimed physical properties are present in the prior art of record. Absent an objective showing to the contrary, the addition of the claimed physical properties to the claim language fails to provide patentable distinction over the prior art of record, meeting the limitations of claims 2-8 and 14-15.

Regarding claims 12 and 13

The composition of the individual silicon oxynitride layers is disclosed in Table 2 wherein the first silicon oxynitride layer has an atomic % composition of Si 33%, O 26.5%, and N 24%. The second silicon oxynitride layer has an atomic % composition of Si 32%, O 59.5%, and N 7%, (column 7, lines 13-33), meeting the limitations of claims 12 and 13.

10. Claims 16-18 and 20 are rejected under 35 U.S.C. 102(a) as being anticipated by United States Patent Application Publication no. 2003/0155632, Goldstein.

Regarding claim 16

Goldstein discloses a high reflector tunable stress coating used for a micro-electromechanical mirror, (page 1, section 0015). The stress coating is comprised of silicon oxynitride, which varies from tensile stress to compressive stress at the surface of the coating, (page 2, sections 0022-0024),.

The phrase "for providing environmental stability and mechanical integrity in space" is considered a statement of intended use. The intended use of the claimed invention must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. If the prior art structure is capable of performing the intended use, then it meets the claim. See *In re Casey*, 152 USPQ 235 (CCPA 1967) and *In re Otto*, 136 USPQ 458, 459 (CCPA 1963). Because the tunable stress substrate is not structurally different from the device as claimed by Applicant, the device as claimed does not provide patentable distinction over the prior art of record, meeting the limitations of claim 16.

Regarding claims 17-18 and 20

The substrate upon which the coating is formed can be silicon, silicon-on-insulator, aluminum oxide, or silicon-on-sapphire, (page 2, section 0028), meeting the limitations of claim 17.

Upon the substrate is formed a reflective layer comprised of silver, which is a known reflector of solar radiation, (page 2, section 0020), meeting the limitations of claim 18.

As the silicon oxynitride layer transitions from a tensile layer to a compressive layer, the coating will consists of sublayers where the lower part of the coating will be more tensile and the

upper part will be more compressive. Absent a showing to the contrary, the sublayer will be present in the coating, meeting the limitations of claim 20.

Claim Rejections - 35 USC § 103

11. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> *(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.*

12. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

13. Claims 1, 11, 14-20, and 31 are rejected under 35 U.S.C. 103(a) as being unpatentable over United States Patent no. 6,587,263, Iacovangelo et al in view of United States Patent Application Publication no. 2003/0155632, Goldstein as applied to claim 16 above.

Regarding claims 1, 14-16, 20, and 31

Iacovangelo et al disclose an optical solar reflector comprised of substrate, a bond layer, a reflective layer, and a radiative layer, (column 2, lines 35-41). The radiative layer is comprised

of silicon oxide, silicon nitride, or silicon oxynitride, (column 2, lines 42-51). Iacovangelo et al do not specifically disclose that the silicon oxynitride layer has a stress gradient.

Goldstein discloses a high reflector tunable stress coating used for a micro-electromechanical mirror, (page 1, section 0015). The stress coating is comprised of silicon oxynitride which varies from tensile stress to compressive stress at the surface of the coating, (page 2, sections 0022-0024).

Iacovangelo et al and Goldstein disclose inventions related to optical mirrors/reflectors. It would have been within the skill of one in the art at the time of invention to modify the silicon oxynitride coating of Iacovangelo et al with the stress tunable coating of Goldstein in order to minimize or control the stress in the surface coating, (Goldstein, page 1, section 0005). As the silicon oxynitride coating has a stress gradient going from tensile to compressive at the surface, it would have been obvious to one skilled in the art at the time of invention to make separate layers of silicon oxynitride instead of having one integral silicon oxynitride layer as whether the silicon oxynitride layers are separate or integral the purpose going from tensile stress to compressive stress is to make a more stable surface film which will not place hardship on the substrate.

Regarding claims 11 and 17-19

Aluminum, carbon composites, carbon filled polyimide, and aluminum alloys are used for the substrate, (Iacovangelo, column 2, lines 58-60), claims 11, 17, and 19.

The reflective layer is comprised of aluminum or silver, which are known solar radiation reflecting materials, (Iacovangelo, column 2, lines 52-54), claim 18.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Gwendolyn Blackwell whose telephone number is (571) 272-1533. The examiner can normally be reached on Monday - Thursday; 6:30 am - 5:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jennifer McNeil can be reached on (571) 272-1540. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free)..

Gwendolyn Blackwell
Examiner
Art Unit 1775

gab